



CHAPTER 8

RIGGING 400-GALLON CAPACITY WATER TRAILER FOR LOW-VELOCITY AIRDROP ON A 12-FOOT TYPE V AIRDROP PLATFORM



8-1. Description of Load

The 1 1/2-ton, 2-wheeled, 400-gallon tank trailer (model numbers M107A1, M107A2, M149A1, and M149A2) is rigged on a 12-foot, type V platform with two G-11 cargo parachutes. The M149A1 is

shown in these procedures. The empty trailer is 162 inches long, 81 inches wide, 79 inches high and weighs 2,720 pounds. When filled, the trailer weighs 6,150 pounds and is 75 inches high.



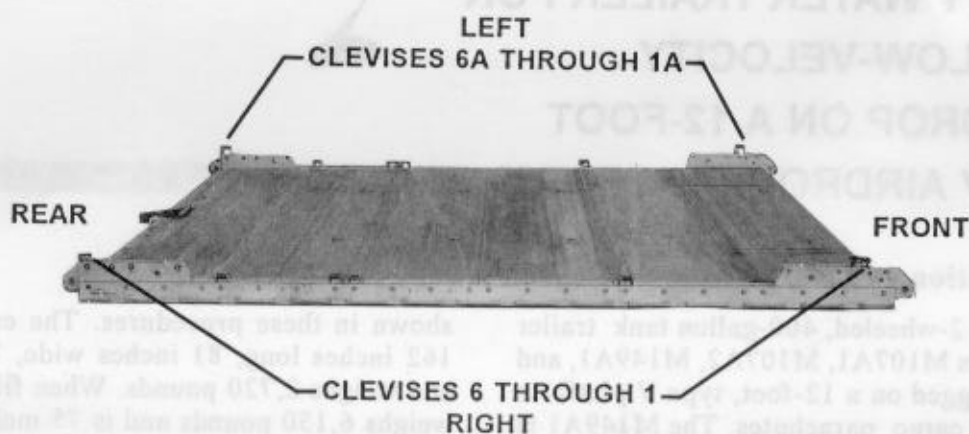
Figure 8-1. M149A1 400-gallon water trailer

8-2. Preparing Platform

Prepare a 12-foot, type V platform using four tandem links and 12 clevis assemblies as shown in Figure 8-2.

Notes:

1. The nose bumper may or may or not be installed.
2. Measurements given in this section are from the front edge of the platform, NOT from the front edge of the nose bumper.



Step:

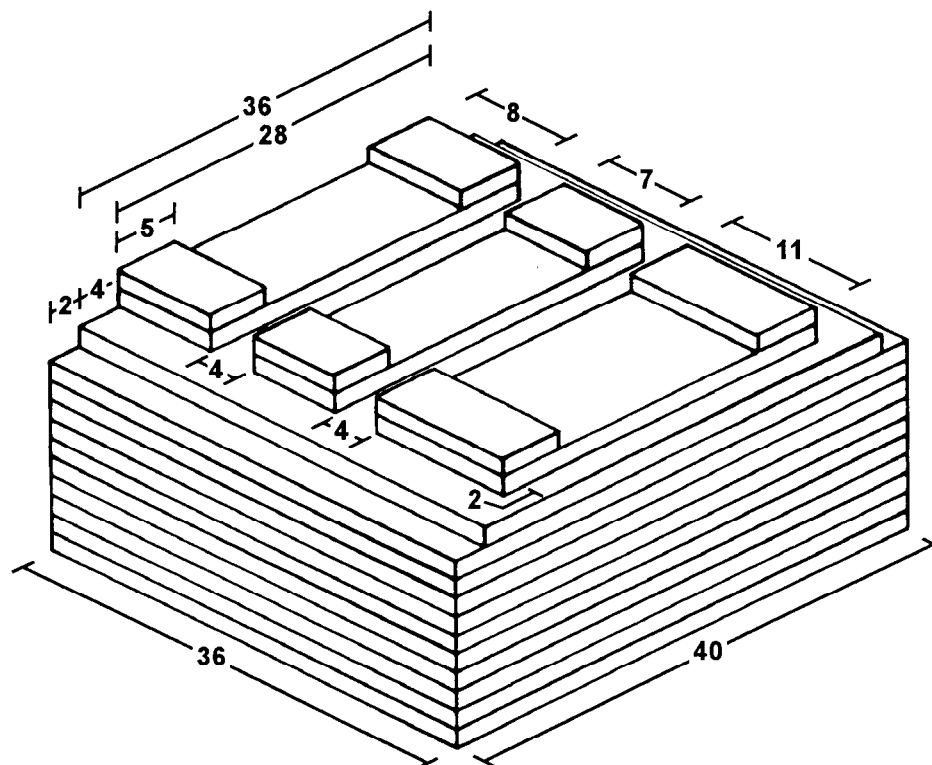
1. Inspect, or assemble and inspect, the platform according to TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a tandem link on the rear of each platform side rail using holes 22, 23, and 24.
4. Install a clevis on bushing 2 on each front tandem link.
5. Install a clevis to bushing 4 on each rear tandem link.
6. Starting at the front of each platform side rail, install clevises on the bushings bolted on holes 8, 16, 17, and 20.
7. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 6 and those bolted to the left side from 1A through 6A.

Figure 8-2. Platform prepared

8-3. Preparing Honeycomb Stacks

Prepare the honeycomb stacks as shown in Figures 8-3, 8-4, 8-5 and 8-6.

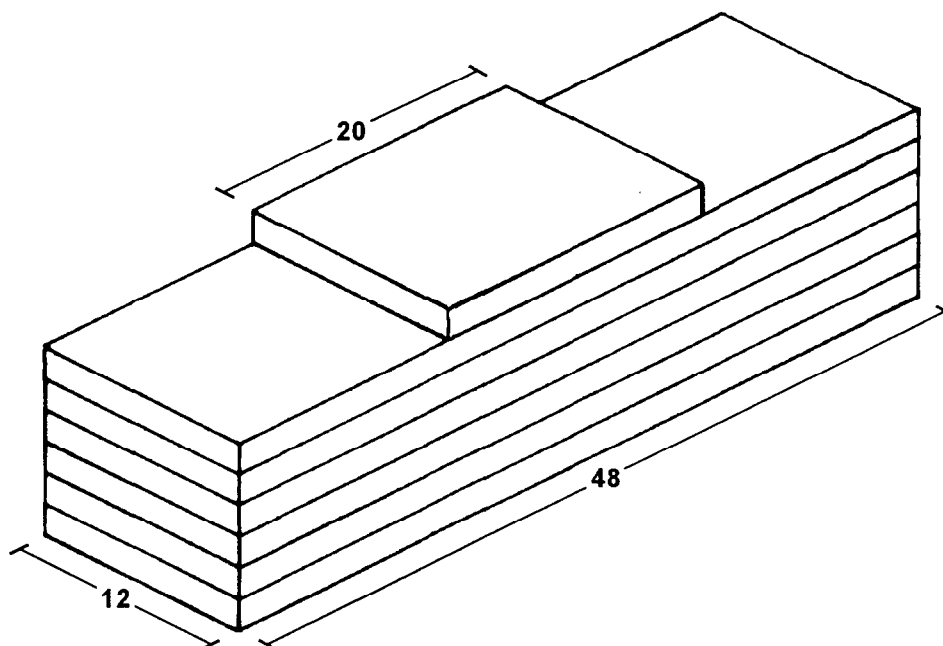
Notes: 1. This drawing is not drawn to scale.
2. All measurements are given in inches.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	10	40	36	Honeycomb	Stack and glue pieces flush.
	1	36	36	Honeycomb	Stack flush and center.
	1	28	11	Honeycomb	Place as shown.
	2	5	11	Honeycomb	Place as shown.
	1	28	7	Honeycomb	Place as shown.
	2	5	7	Honeycomb	Place as shown.
	1	28	8	Honeycomb	Place as shown.
	2	5	8	Honeycomb	Place as shown.

Figure 8-3. Stack 1 prepared

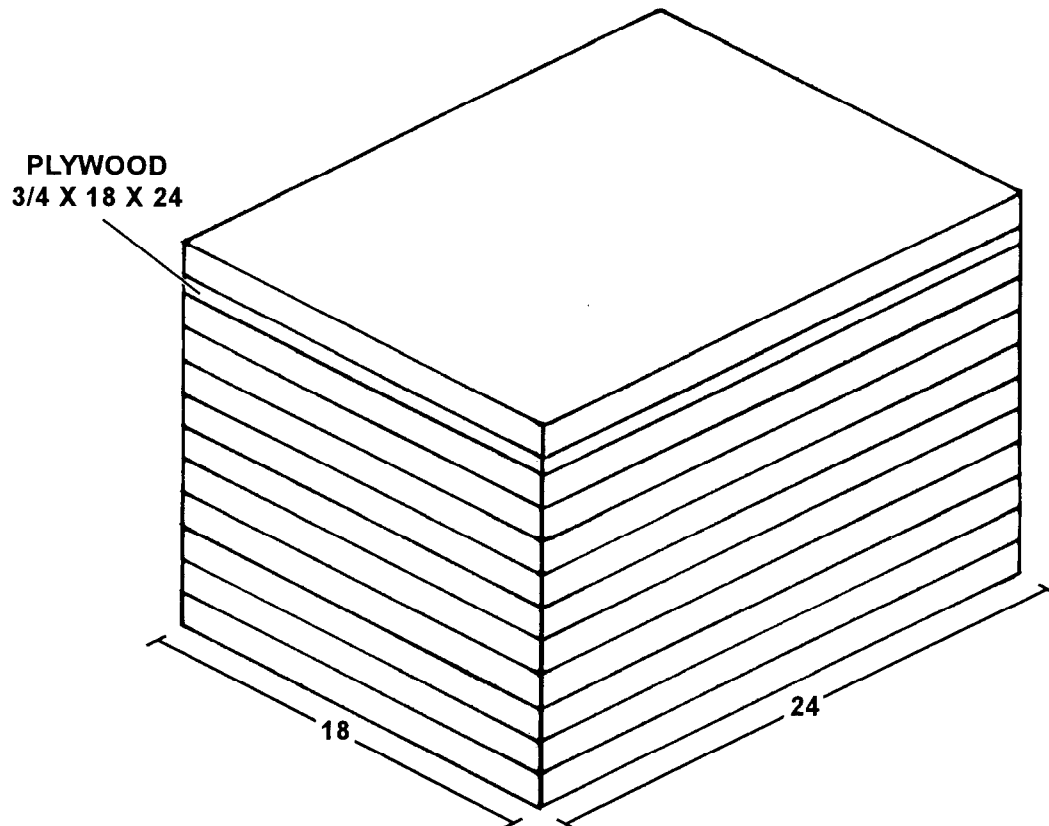
- Notes: 1. This drawing is not drawn to scale.
2. All measurements are given in inches.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
2	6 1	48 20	12 12	Honeycomb Honeycomb	Place and glue to form base. Center and glue on top of base.

Figure 8-4. Stack 2 prepared

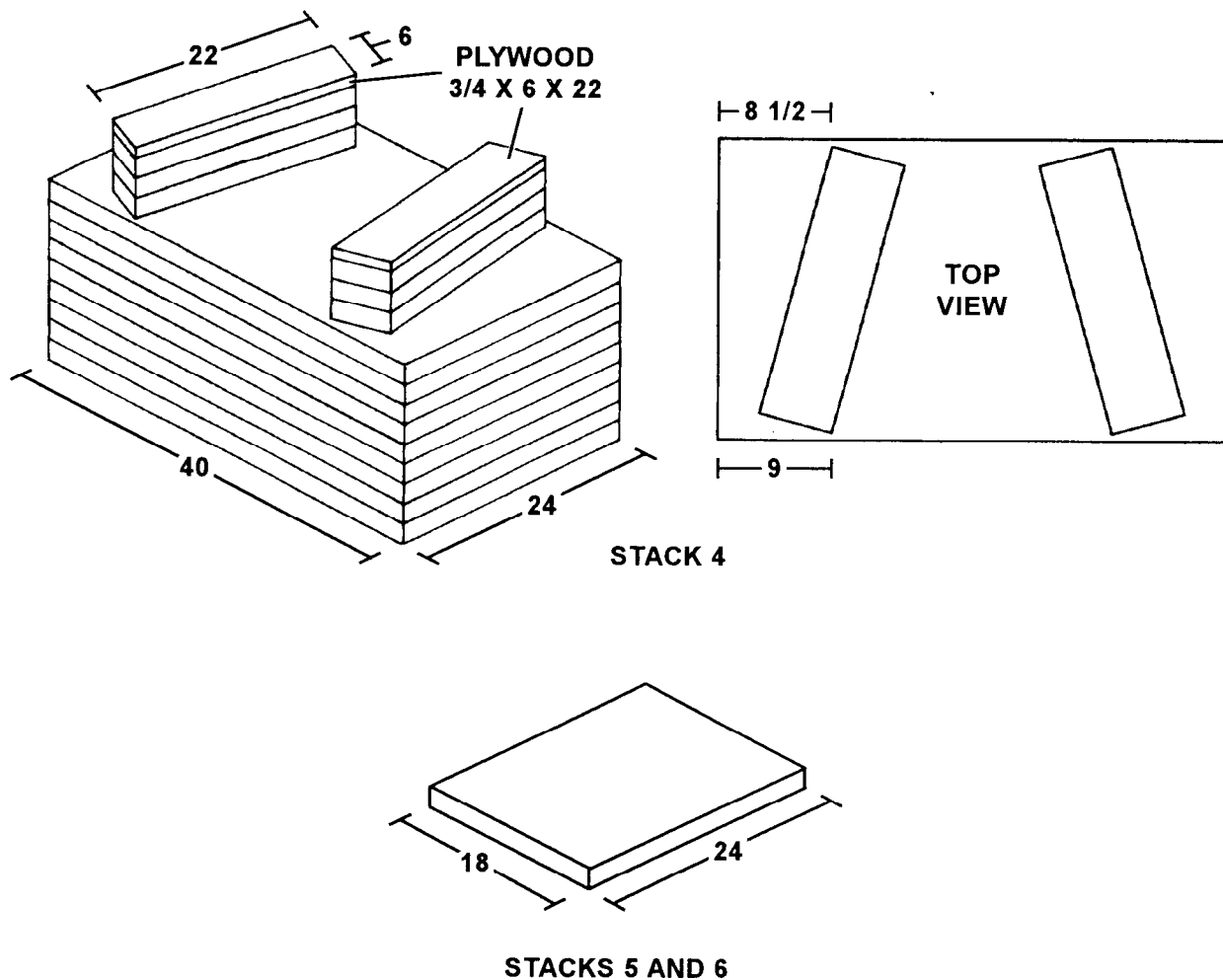
- Notes: 1. This drawing is not drawn to scale.
2. All measurements are given in inches.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
3	10	24	18	Honeycomb	Glue flush to form base.
	1	24	18	3/4-inch plywood	Glue flush on base.
	1	24	18	Honeycomb	Glue flush on plywood.

Figure 8-5. Stack 3 prepared

- Notes: 1. This drawing is not drawn to scale.
2. All measurements are given in inches.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
4	9	40	24	Honeycomb	Glue flush to form base. Glue two stacks of three layers on the base as shown. Place and glue on top of 6-inch by 22-inch pieces. Stacks 5 and 6 consist of one layer.
	6	6	22	Honeycomb	
	2	6	22	3/4-inch plywood	
5	1	18	24	Honeycomb	Stacks 5 and 6 consist of one layer.
6	1	18	24	Honeycomb	

Figure 8-6. Stacks 4, 5 and 6 prepared

8-4. Positioning Honeycomb Stacks

Position the honeycomb stacks as shown in Figure 8-7.

- Notes:
1. This drawing is not drawn to scale.
 2. All measurements are given in inches.
 3. Measurements from the front of the platform are taken from the front edge of the nose bumper crease or the front edge of the first panel.
 4. Measurements from the rear of the platform are taken from the rear edge of the last panel.

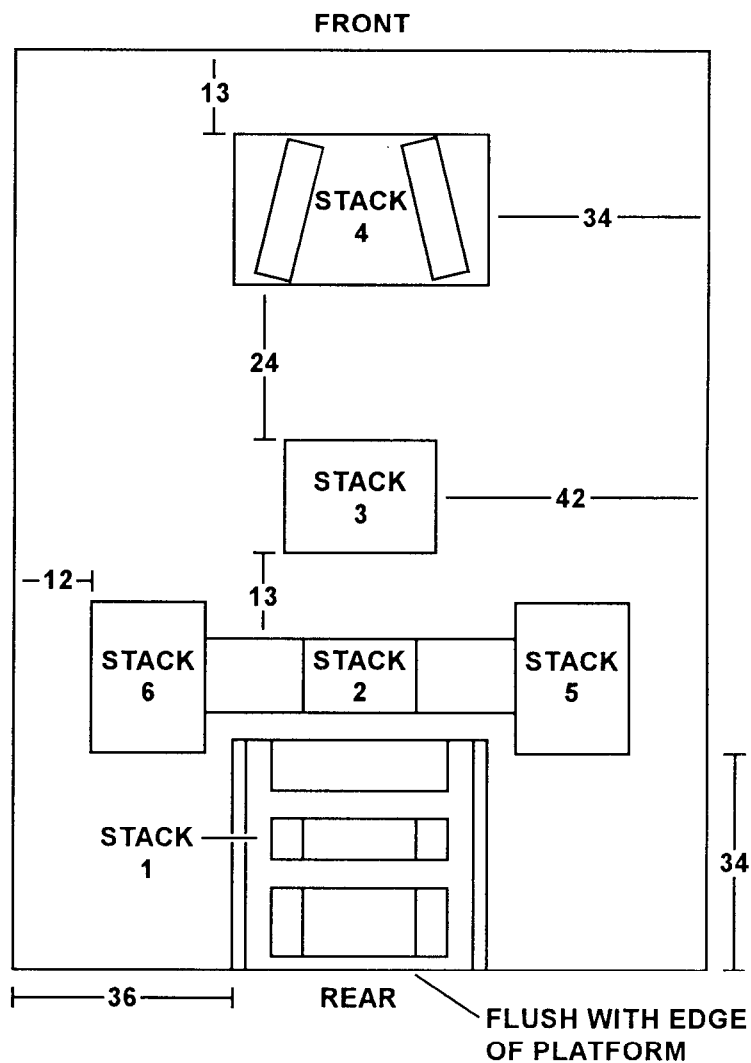


Figure 8-7. Honeycomb positioned

8-5. Preparing Trailer

Prepare the trailer as explained below.

a. Prepare the M149A1 trailer as shown in Figure 8-8.

b. Prepare the M149A2 trailer as shown in steps 1, 3, 4, and 5 of Figure 8-8. Further prepare the M149A2 trailer as shown in Figure 8-9.

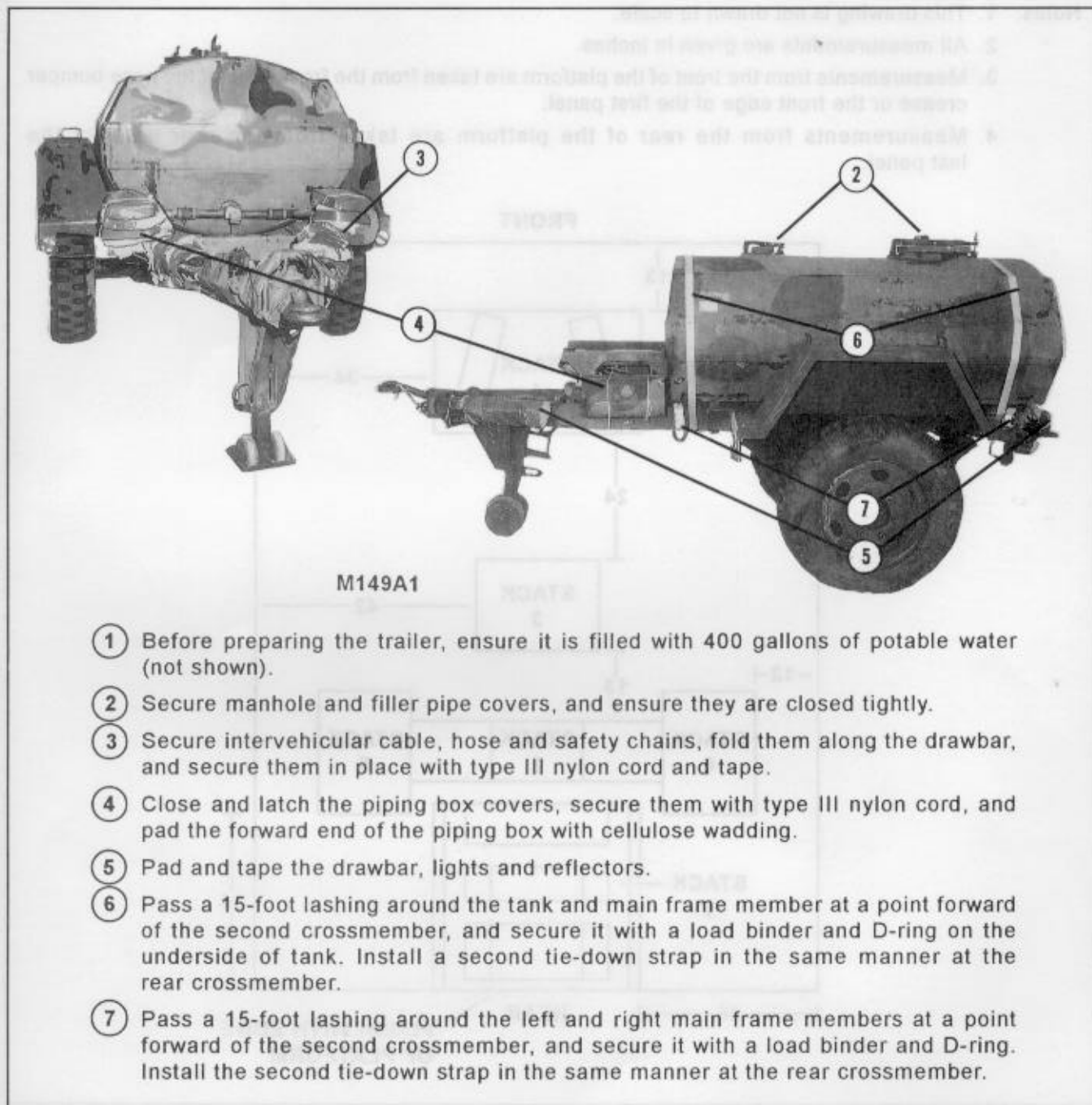
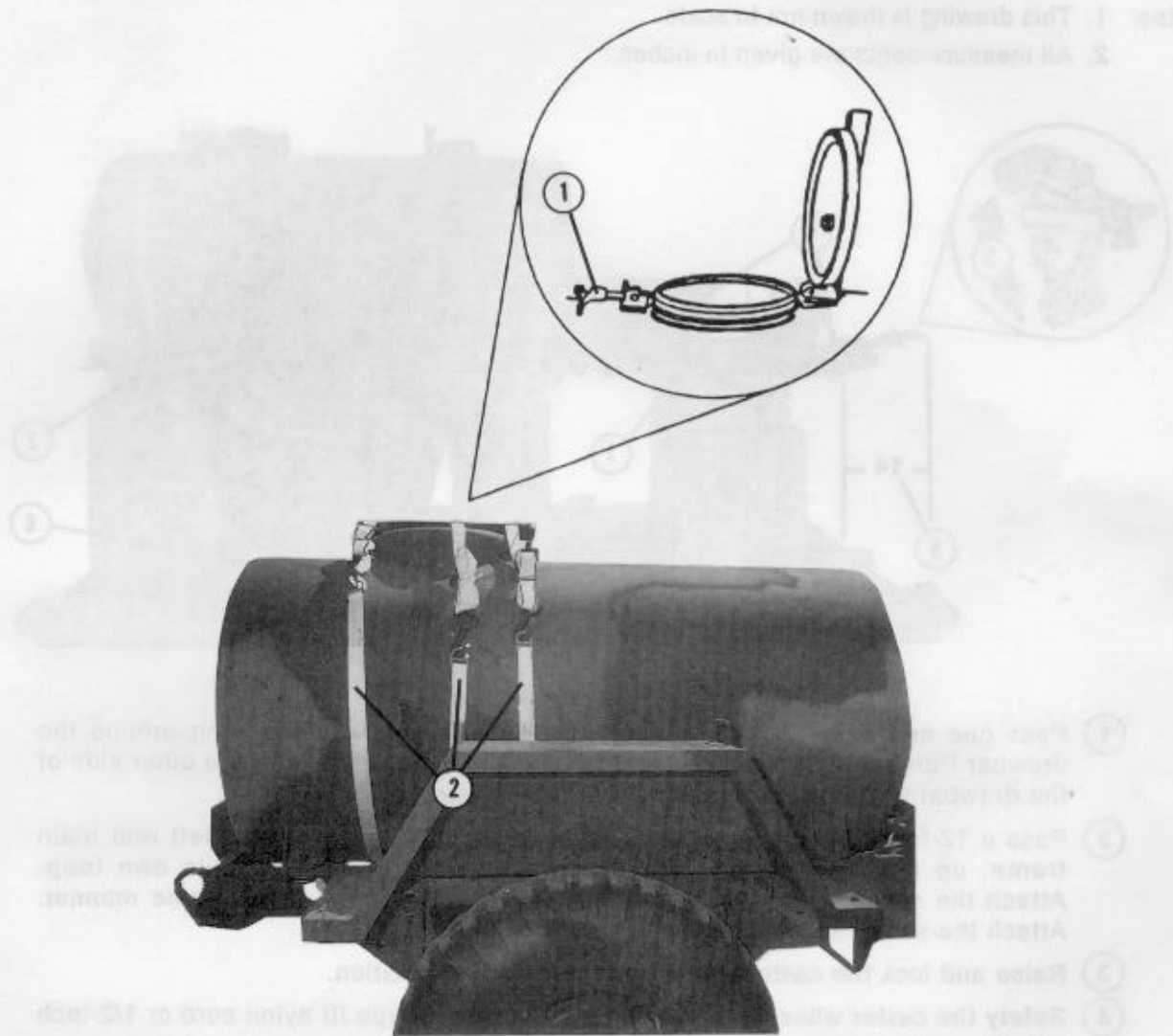


Figure 8-8. Trailer prepared and tank and trailer frame reinforced



M149A2

- ① Secure the manhole cover with the hinged eyebolt and wingnut.
- ② Pass three 15-foot lashings around the tank and over the manhole cover. Secure them with three D-rings and load binders.

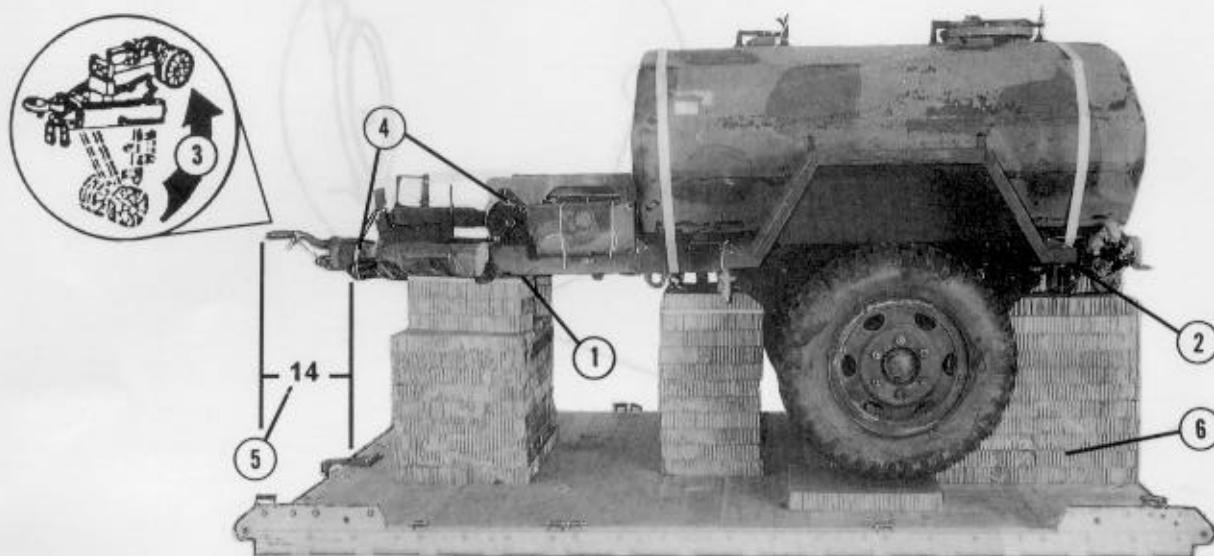
Figure 8-9. M149A2 prepared

8-6. Lifting and Positioning Trailer

Lift and position the trailer with four 12-foot (2-loop), type XXVI nylon webbing lifting slings.

Position the trailer on the platform as shown in Figure 8-10.

- Notes: 1. This drawing is drawn not to scale.
2. All measurements are given in inches.



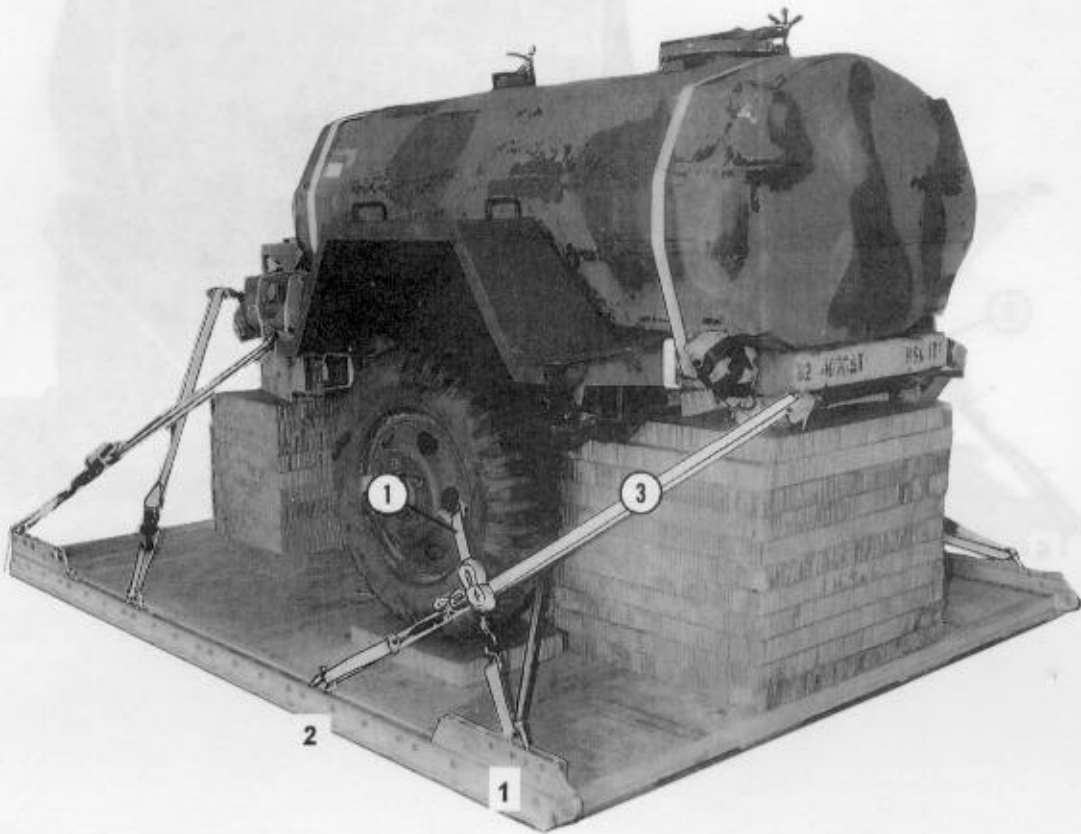
- ① Pass one end of a 12-foot (2-loop), type XXVI nylon webbing sling around the drawbar frame and through its own loop. Install a second sling to the other side of the drawbar frame in the same manner (not shown).
- ② Pass a 12-foot (2-loop), type XXVI nylon webbing sling around the left rear main frame, up through the left rear lifting provision, and through its own loop. Attach the second sling around the right rear main frame in the same manner. Attach the slings and lift the trailer (not shown).
- ③ Raise and lock the caster wheel into the traveling position.
- ④ Safety the caster wheel with two separate pieces of type III nylon cord or 1/2-inch tubular nylon webbing.
- ⑤ Make sure the front edge of the lunette overhangs the rear of the platform by 14 inches.
- ⑥ Position the trailer on the honeycomb with the rear of the trailer flush with the front edge of the platform.
- ⑦ Remove the lifting slings (not shown).

Figure 8-10. Lifting and positioning trailer

8-7. Installing Lashings

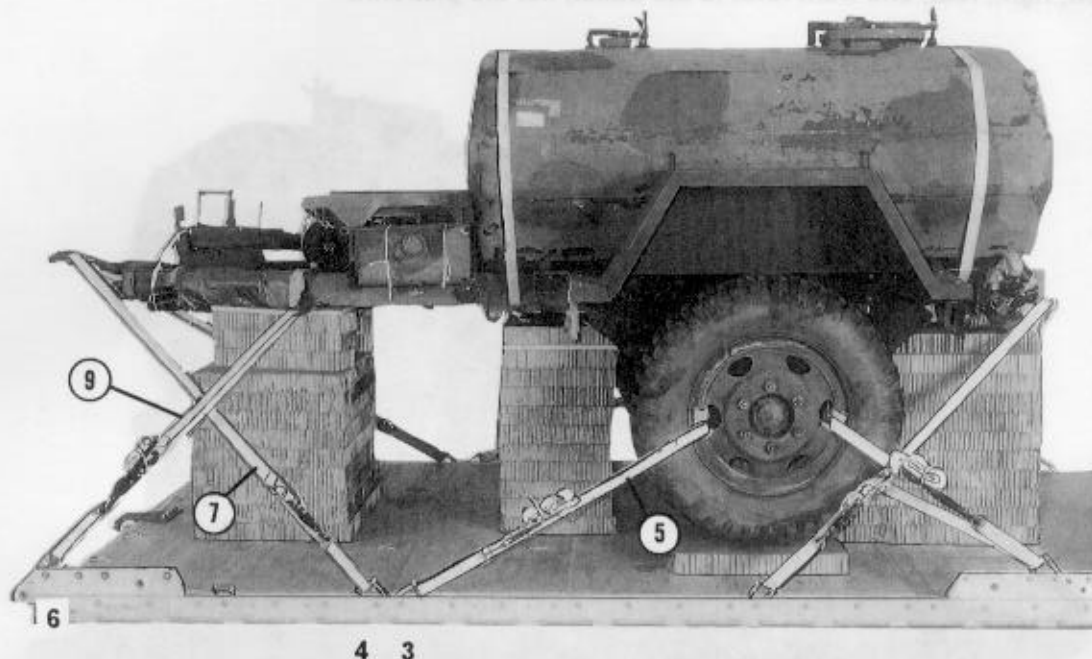
Lash the trailer to the platform with twelve 15-foot tie-down assemblies. Install the lashings according to FM 10-500-2/TO 13C7-1-5 and as shown in Figures 8-11 and 8-12.

Note: Left, right, rear, and front refer to the trailer, not the platform.



Lashing Number	Clevis Number	Instructions
1	1	Pass lashing: Through left wheel.
2	1A	Through right wheel
3	2	Through left rear tie-down provision.
4	2A	Through right rear tie-down provision.

Figure 8-11. Lashings 1 through 4 installed



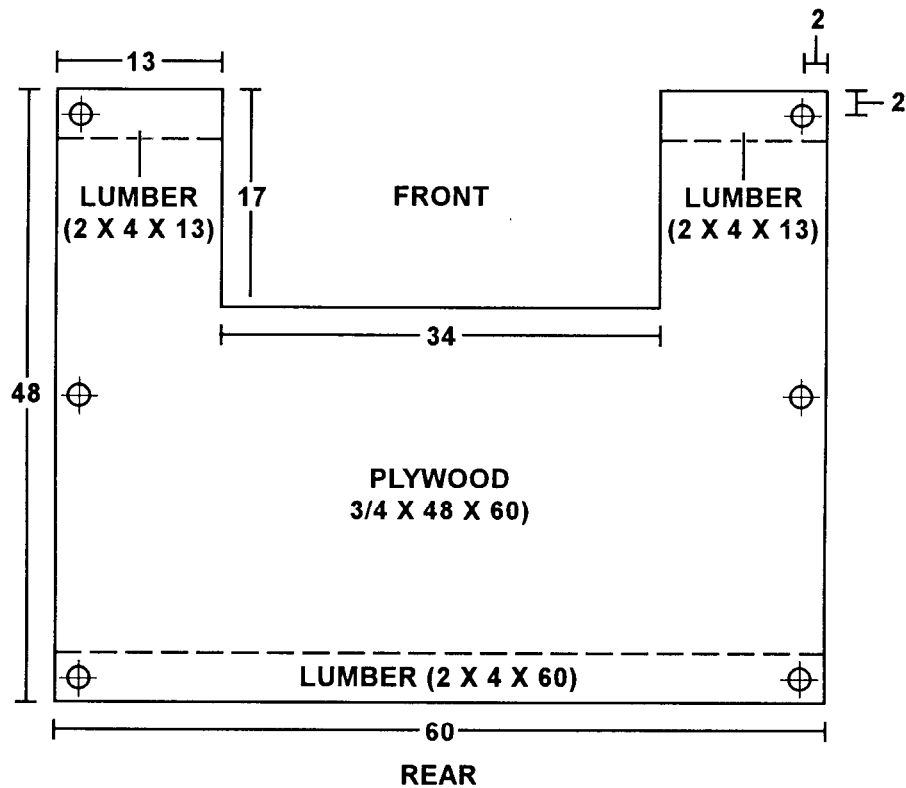
Lashing Number	Clevis Number	Instructions
5	3	Pass lashing: Through left wheel.
6	3A	Through right wheel.
7	4	Through lunette.
8	4A	Through lunette.
9	6	Through left front tie-down provision.
10	6A	Through right front tie-down provision.

Figure 8-12. Lashings 5 through 10 installed

8-8. Building Parachute Stowage Platform

Build the parachute stowage platform as shown in Figure 8-13. Install the parachute stowage platform as shown in Figure 8-14.

- Notes: 1. This drawing is not drawn to scale.
2. All measurements are given in inches.



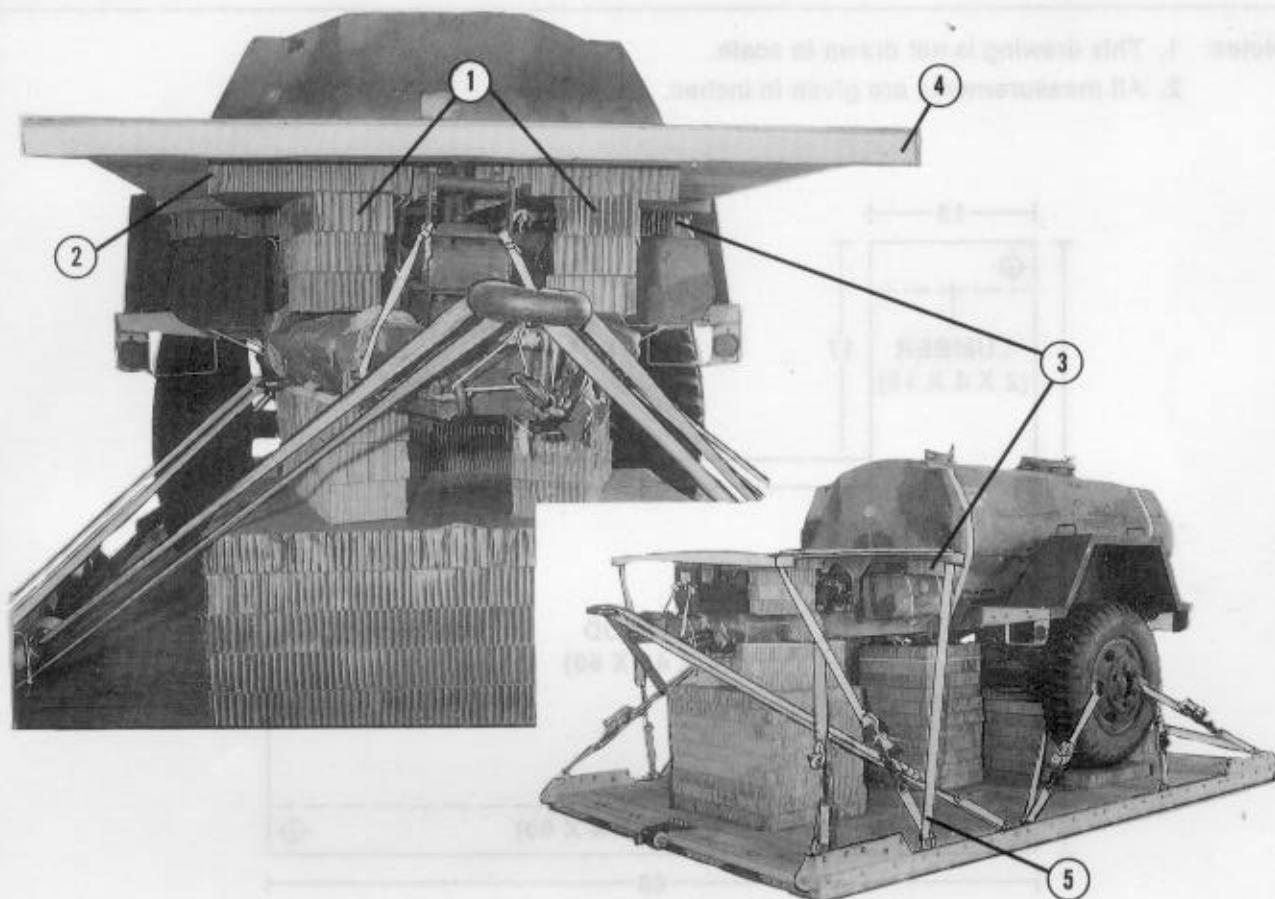
Step:

1. Cut a 3/4- by 48- by 60-inch piece of plywood.
2. Make a 17- by 34-inch cutout in the center of the front of the plywood.
3. Nail a 2- by 4- by 13-inch piece of lumber on each side of the plywood using eightpenny nails. Nail a 2- by 4- by 60-inch piece of lumber on the rear of the plywood using eightpenny nails.
4. Drill six 2-inch holes 2 inches from the edge of the plywood as shown.

Figure 8-13. Parachute stowage platform constructed

8-9. Installing Parachute Stowage Platform

Install the parachute stowage platform as shown in Figure 8-14.

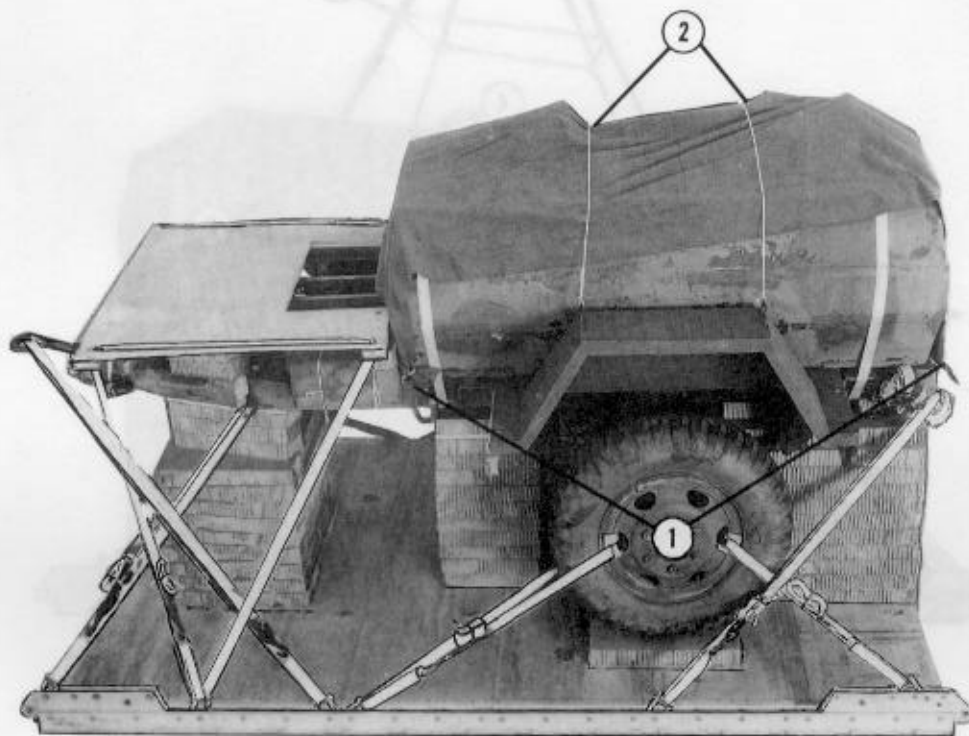


- ① Glue three 6-inch by 12-inch pieces of honeycomb and position them on each drawbar.
- ② Place a 36-inch by 36-inch piece of honeycomb on top of the two 6-inch by 12-inch honeycomb stacks.
- ③ Place a 6-inch by 12-inch piece of honeycomb on the forward edge of each piping box.
- ④ Position the parachute stowage platform on the honeycomb stacks.
- ⑤ Lash the stowage platform to clevises 5 and 5A, using two 15-foot lashings, two D-rings, and two load binders.

Figure 8-14. Parachute stowage platform installed

8-10. Installing Load Cover

Install the load cover as shown in Figure 8-15.

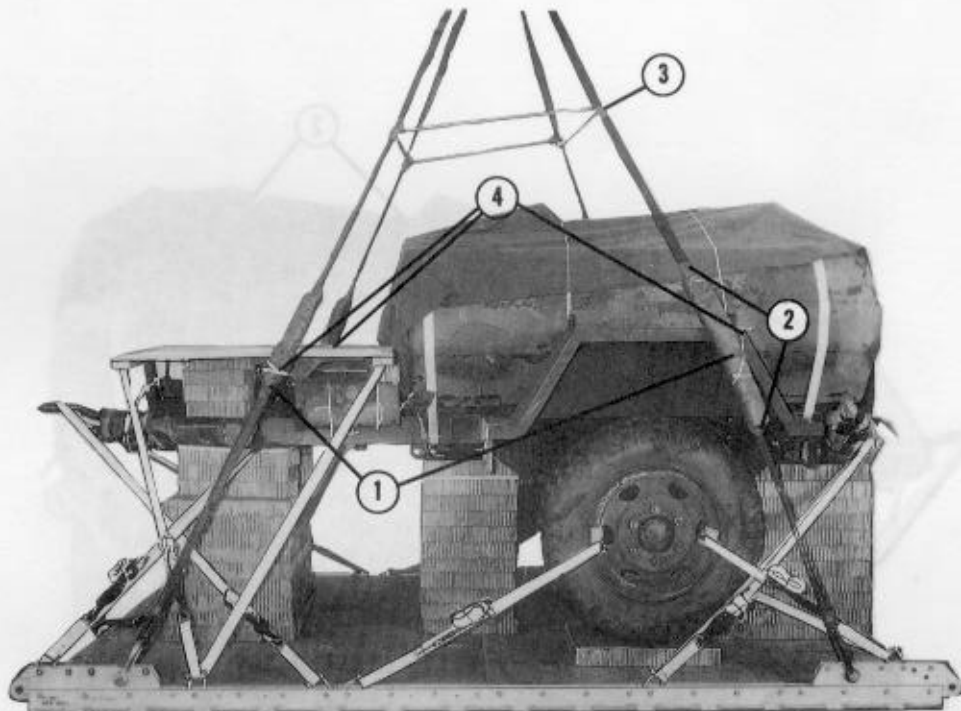


- ① Secure all four corners of the 60-inch by 144-inch cotton cover to convenient points on the load with type III nylon cord.
- ② Run two additional pieces of type III nylon cord over the top of trailer from the handles on the fenders.

Figure 8-15. Load cover installed

8-11. Installing and Safetying Suspension Slings

Install and safety four large suspension clevises and four 12-foot (2-loop), type XXVI nylon webbing slings as shown in Figure 8-16.

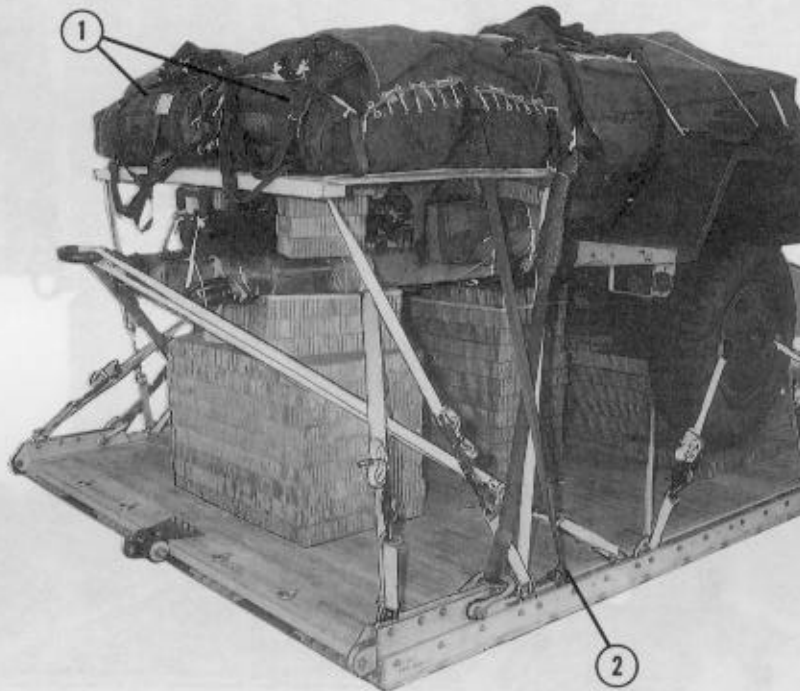


- ① Place a 1/2-inch by 10-inch by 30-inch piece of felt padding where each suspension sling makes contact with the load. Tie the felt padding in place using type III nylon cord.
- ② Tape the padding, and extend the tape over the suspension sling 6 inches on both ends.
- ③ Install a deadman's tie according to FM 10-500-2/TO 13C7-1-5.
- ④ Safety the rear slings to the middle holes in the parachute stowage platform with type III nylon cord. Safety the front slings to the fender handles with type III nylon cord.

Figure 8-16. Suspension slings installed and safetyed

8-12. Stowing Cargo Parachutes

Stow two G-11 cargo parachutes on the parachute stowage platform according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 8-17.

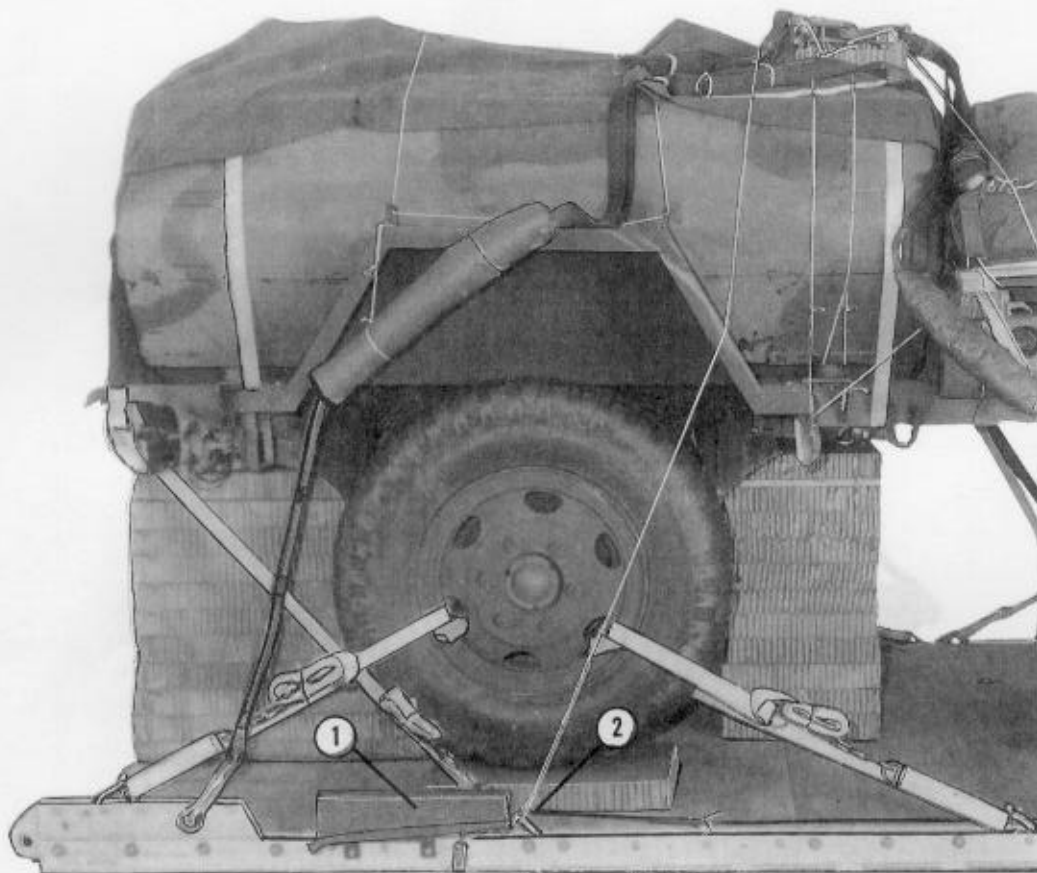


- ① Prepare and position two G-11 parachutes on the parachute stowage platform.
- ② Install a cargo parachute restraint strap according to FM 10-500-2/TO 13C7-1-5. Secure the ends to bushings 19 and 19A.

Figure 8-17. Cargo parachutes stowed

8-13. Installing Extraction System

Install the EFTC extraction system according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 8-18.



- ① Install the EFTA mounting brackets to the front mounting holes on the left platform rail. Install the actuator to the EFTA mounting bracket.
- ② Attach a 12-foot release cable to the actuator.

Figure 8-18. Extraction system installed

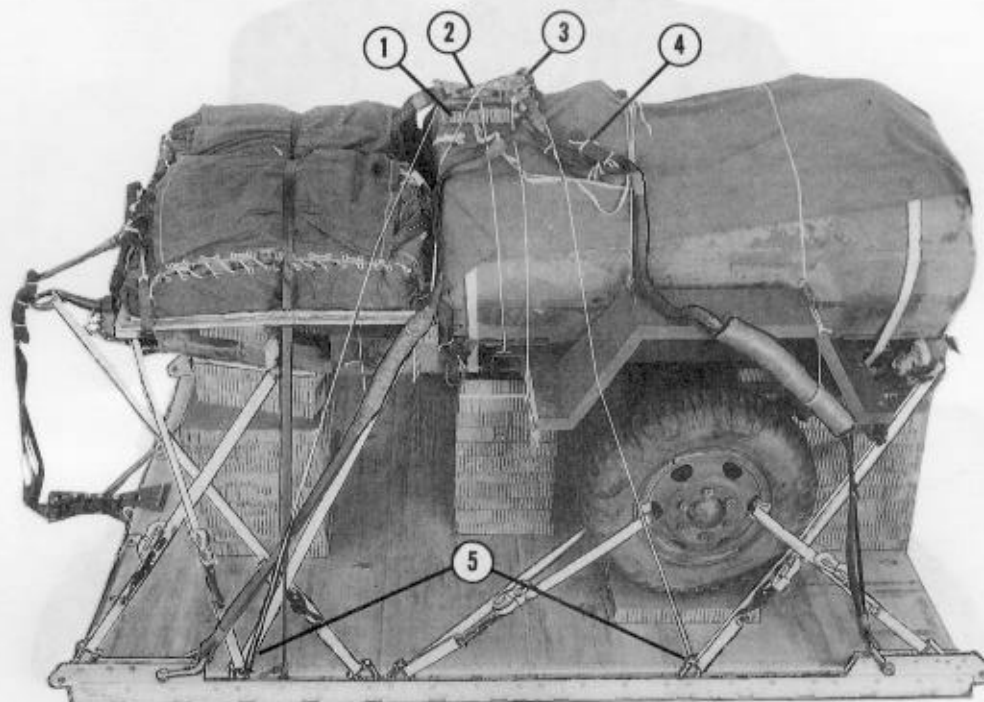


- ③ Install the latch assembly to the extraction bracket.
- ④ Safety the release cable according to FM 10-500-2/TO 13C7-1-5.
- ⑤ Safety the 9-foot (2-loop) deployment line to the lunette with type I, 1/4-inch cotton webbing.

Figure 8-18. Extraction system installed (continued)

8-14. Installing Parachute Release

Install an M-1 cargo parachute release according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 8-19.



- ① Place a 12-inch by 16-inch piece of honeycomb on the top rear edge of the trailer, and secure the honeycomb with type III nylon cord.
- ② Prepare and position the M-1 cargo parachute release and center the release assembly on top of the honeycomb.
- ③ Attach the release to the suspension slings and the cargo parachutes according to FM 10-500-2/TO 13C7-1-5.
- ④ S-fold the slack in the suspension slings and tie the folds in place with type I, 1/4-inch cotton webbing.
- ⑤ Secure the release to convenient points on the load or the platform.

Figure 8-19. Parachute release installed

8-15. Installing Provisions for Emergency Restraints

Select and install provisions for emergency restraints according to the emergency aft restraint requirements table found in FM 10-500-2/TO 13C7-1-5.

8-16. Placing Extraction Parachute

Select the extraction parachute and extraction parachute line needed using the extraction parachute and extraction line requirements table found in FM 10-500-2/TO 13C7-1-5.

8-17. Marking the Rigged Load

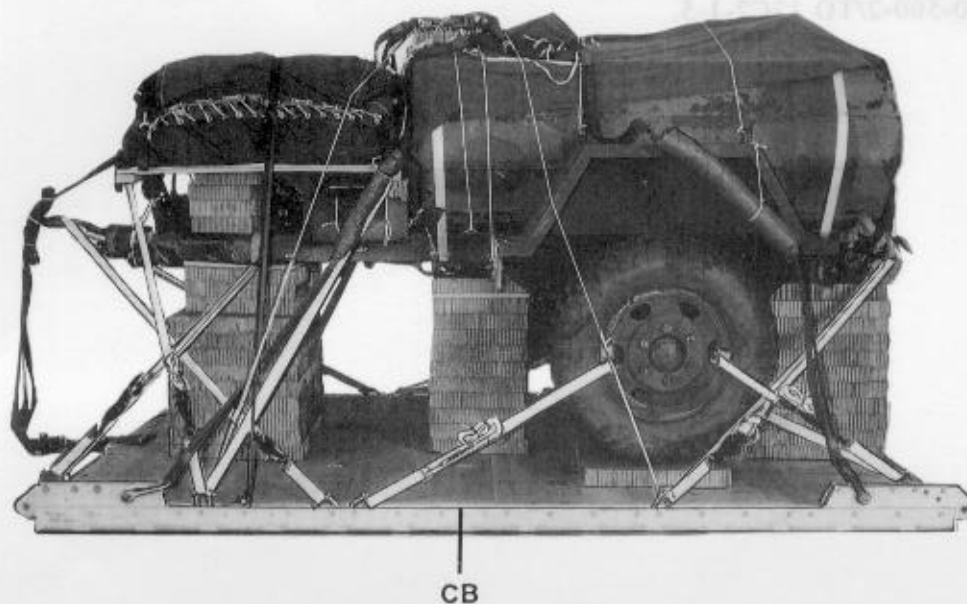
Mark the rigged load according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 8-20. If the load varies from the one shown, the weight, height, CB, tip-off curve and parachute requirements must be recomputed.

8-18. Equipment Required

Use the equipment listed in Table 8-1 to rig this load.

CAUTION

Make the final rigger inspection required by FM 10-500-2/TO 13C7-1-5 before the load leaves the rigging site.

**RIGGED LOAD DATA**

Weight: Load shown	7,200 pounds
Maximum load allowed	10,000 pounds
Height	86 inches
Width	108 inches
Length	156 inches
Overhang: Front	0 inches
Rear (lunette)	14 inches
CB (from front edge of platform)	63 inches
Extraction System	EFTC

Figure 8-20. M149A1 water trailer rigged for low-velocity airdrop on a type V platform

Table 8-1. Equipment required for rigging 400-gallon capacity water trailer for low-velocity airdrop on a type V platform

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag.	1
4030-00-090-5354	Clevis assembly, suspension, large	5
4030-00-678-8562	Clevis assembly, suspension, medium (aft restraint) (15-ft extraction, 1 med per side)	2
	(22-ft extraction, 2 med per side)	4
8305-00-242-3593	Cloth, cotton duck, 60-in	12 yd
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
1670-00-360-0328	Cover, clevis, large	2
5365-00-856-0266	D-ring, heavy-duty, 10,000-lb	4
8305-00-937-0147	Felt, 1/2-in thick	As required
1670-01-183-2678	Line, leaf, extraction	2
1670-00-753-3790	Line, multi-loop, deployment, type XXVI nylon webbing 9-ft (2-loop)	1
1670-01-062-6302	Line, multi-loop, riser extension, type XXVI nylon webbing 20-ft (2-loop)	2
1670-01-062-6303	Line, multi-loop, suspension, type XXVI nylon webbing 12-ft (2-loop)	4
1670-01-064-4452	Line, extraction, 60-ft (1-loop), type XXVI nylon webbing (for C-130 w 15-ft extraction)	1
1670-01-062-6313	Line, extraction, 60-ft (3-loop), type XXVI nylon webbing (for C-130 w 22-ft extraction)	1
1670-01-107-7652	Line, extraction, 160-ft (1-loop), type XXVI nylon webbing (for C-141 w 15-ft extraction)	1
1670-01-107-7651	Line, extraction, 140-ft (2-loop), type XXVI nylon webbing (for C-141 w 22-ft extraction)	1
1670-00-783-5988	Link type IV (for 15-ft extraction)	1
	Link, 3 3/4-inch, two point	1
5305-00-435-8994	Bolt, 1-in diam, 4-in long	2
5310-00-232-5165	Nut, 1-in, hexagon	2
1670-00-003-1953	Plate, side, 3 3/4-in	2
5365-00-007-3414	Spacer, large	2
5315-00-010-4659	Nail, steel wire, common, 8d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb	32 Sheets
1670-01-016-7841	Parachute, cargo, G-11B	2
	Parachute, cargo extraction:	
1670-01-063-3715	15-ft	1
1670-01-063-3716	22-ft	1

Table 8-1. Equipment required for rigging 400-gallon capacity water trailer for low-velocity airdrop on a type V platform (continued)

National Stock Number	Item	Quantity
	Platform, AD, type V, 12-ft:	
	Bracket:	
1670-01-353-9425	Inside and outside EFTA mounting kit	1
1670-01-162-2375	Inside EFTA	1
1670-01-162-2374	Outside EFTA	1
1670-01-162-3772	Clevis assembly, type V	12
1670-01-162-2376	Extraction bracket assembly	1
1670-00-434-5783	Coupling, airdrop, extraction force transfer w 12-ft cable	1
1670-01-162-2381	Tandem link,	4
5530-00-128-4981	Plywood, 3/4-in:	
	24- by 18-in.	1
	6- by 22-in.	2
1670-00-040-8219	Strap, parachute release, multicut comes w 3 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	14
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
	Nylon:	
	Tubular:	
8305-00-082-5752	1/2-in <u>or</u>	
8305-00-268-2453	1/2-in	As required
8305-00-263-3591	Type VIII, 3,600-lb	As required

GLOSSARY

ACB attitude control bar

AD airdrop

AFB Air Force base

AFJAM armed forces joint manual

AFTO Air Force technical order

ALC Air Logistics Center

AMC Air Mobility Command

ARNG Army Reserve National Guard

attn attention

C change

CAP capacity

CB center of balance

d penny

DA Department of the Army

DC District of Columbia

DD Department of Defense

diam diameter

ea each

EFTA extraction force transfer actuator

EFTC extraction force transfer coupling

fig figure

FM field manual

ft foot/feet

gal gallon

HQ headquarters

IL Illinois

in inch

K thousand

LAPE low-altitude parachute extraction

LAPES low-altitude parachute extraction system

lb pound

MAC Military Airlift Command

med medium

mm millimeter

no number

NSN national stock number

PEFTC extraction force transfer coupling (platform)

Qty quantity

rqr requirement

sec second

SL/CS static line/connector strap

sq square

TM technical manual

TO technical order

TRADOC United States Army Training and Doctrine Command

TX Texas

US United States

USAR United States Army Reserve

VA Virginia

w with

yd yard

REFERENCES

These documents must be available to the intended users of this publication.

*AFJMAN 24-204/TM 38-250. *Packaging and Materials Handling: Preparing of Hazardous Materials for Military Air Shipments*. November 1994.

FM 10-500-2/TO 13C7-1-5. *Airdrop of Supplies and Equipment: Rigging Airdrop Platforms*. 1 November 1990.

FM 10-553/TO 13C7-18-41. *Airdrop of Supplies and Equipment: Rigging Ammunition*. Interim October 1991.

TM 9-2330-202-14&P. *Operator's, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tools List for Trailer, Cargo*. 10 August 1983.

TM 10-1670-208-20&P/TO 13C3-4-12. *Organizational Maintenance Manual Including Repair Parts and Special Tools List for Platforms, Type II Modular and LAPES/Airdrop Modular*. 10 August 1978.

TM 10-1670-268-20&P/TO 13C7-52-22. *Organizational Maintenance Manual with Repair Parts and Special Tools List: Type V Airdrop Platform*. 1 June 1986.

TM 10-1670-277-23&P/TO 13C5-28-2/NAVAIR 13-1-30. *Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, 28-Foot Diameter, Extraction*. 9 October 1990.

TM 10-1670-278-23&P/TO 13C5-26-2/NAVAIR 13-1-27/TM 01109C-23&P/1. *Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, 15-Foot Diameter, Cargo Extraction*. 6 November 1989.

TM 10-1670-279-23&P/TO 13C5-27-2/NAVAIR 13-1-28. *Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, 22-Foot Diameter, Cargo Extraction*. 30 August 1989.

TM 10-1670-280-23&P/TO 13C5-31-2/NAVAIR 13-1-31. *Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, G-11A, G-11B, and G-11C*. 5 August 1991.

TM 10-1670-286-20&P/TO 13C5-2-41. *Unit Maintenance Manual for Sling/Extraction Line Panel (Including Stowing Procedures)*. 1 April 1986.

AFTO Form 22. *Technical Order Publication Improvement Report*. April 1973.

*AFJMAN 24-204 has superseded AFR 71-4/TM 38-250 (15 January 1988). Change 4 pages reflect this change. The basic manual and changes 1, 2, and 3 still reference the superseded publication. You may wish to make pen and ink changes to update the old reference citations accordingly.

DA Form 2028. *Recommended Changes to Publications and Blank Forms*. February 1974.

****DD Form 1387-2. *Shipper's Declaration for Dangerous Goods*.**

****Shipper's Declaration for Dangerous Goods has superseded DD Form 1387-2 (February 1982). Change 4 pages reflect this change. The basic manual and changes 1, 2, and 3 still reference the superseded publication. You may wish to make pen and ink changes to update the old reference citations accordingly.**

References-2